

REMARKS

In the Official Action, Claims 1, 6, and 14-20 were rejected under 35 U.S.C. 103 as being unpatentable over Ellis (WO 01/98575) in view of Irwin (US 5,612,113), and claims 2-4, 8-10, 16, and 21-22 were rejected under 35 U.S.C. 103 as being unpatentable over the combined teachings of Ellis, Irwin, and Higgins (US 2002/0142126) for reasons set forth in the Office Action.

Claims 12, 13 and 23 were said to have allowable subject matter.

Claims 5, 7, and 11 were not discussed in the Office Action, but, for the purpose of facilitating response to the Action, are presumed to be rejected.

With respect to the rejections under 35 U.S.C. 103, the claims are amended to distinguish over the teachings of the cited art, and the following argument is presented to distinguish the claimed subject matter from the teachings of the cited art, thereby to overcome the rejections, and to show the presence of allowable subject matter in the rejected claims.

With respect to the claims 12, 13 and 23 having allowable subject matter, it is noted, that each of these claims recite that the secondary backing layer comprises an apertured film. With respect to claim 23, its subject matter is inserted into base claim 18 to obtain allowance of claim 18. Claim 23 is canceled in view of the insertion of its subject matter into claim 18. Accordingly, claim 18 and its depending claims 19-22 should now be allowable.

With respect to terminology employed in the present claims, it is noted that the term "secondary backing" is defined by an organization, the CARPET INSTITUTE, which is supported by major carpet manufacturers, and establishes recognized testing procedures. "Secondary backing" is defined by this organization as a "fabric laminated to the back of the carpet to increase dimensional stability". It is noted that a major function of the secondary backings 22 and 38 is to protect the respective breathable membranes 18 and 34 from abrasion

(present specification on page 2 at line 14, page 5 at line 5, and page 5 at line 25). Accordingly, in order to emphasize the aspect of protection of the breathable membranes 18 and 34, the claims are amended in this response to change the wording "secondary backing" to "further backing".

The inventor herein has been performing further research and development for the carpet disclosed in the present specification. In the matter of protecting the breathable membrane, which is a relatively fragile fabric as compared to other fabric layers of the carpet, it has been noticed that, while abrasion from contact with a floor is an important consideration in the design of the carpet, another very significant source of abrasion arises from contact with other fabric layers of the carpet. For example, the secondary backing (such as is shown in Ellis) is a major contributor to the abrasion and destruction of the breathable membrane. With reference to present Figs. 1 and 2, each of the apertured films of the secondary backings 22 and 38 functions as a good abrasion resistant layer because it is of similar durometer hardness to that of the breathable membrane. The inventive feature of the backing constructed of the apertured film is disclosed in present claim 12.

By way of further example of a fabric of a carpet that may abrade the breathable membrane, one may consider a layer of jute fibers, or now a more commonly used fabric such as polypropylene having spun or fibrillated fibers encased in latex. The durometer hardness of the latex encasing the fibers is much harder than the relatively soft material of the breathable membrane. Thus, the presence of a layer of jute fibers (or polypropylene fibers encased in the latex) in contact with the fragile breathable membrane, which membrane is impervious to liquid, presents a situation wherein a relatively hard material (the jute or polypropylene in latex) contacts a relatively soft material (polyethylene or similar thin film of plastic breathable material). A relative movement between the two materials provides a rubbing and/or a pounding of the relatively hard material against the relatively soft material, which rubbing or abrasion eventually causes a failure (such as a tear) in the breathable material wherein a liquid can pass through the breathable membrane.

This failure mechanism is readily demonstrated with a standard form of carpet test, known as a Dynamic Crush Test or also known as 10,000 Impact Test, wherein a hammer of a dynamic crush apparatus impacts repetitively upon a region in a sample of a carpet. The carpet includes a layer of breathable liquid impervious membrane. Typically, the hammer impacts with a pressure of ten pounds per square inch in a sequence of 10,000 impacts. A liquid dye is poured onto the carpet before the impacting of the hammer begins, after which, during the impacting of the hammer, the carpet is observed to detect the presence of leakage of the liquid through the carpet. The carpet passes the test if no penetration of the liquid is noticed.

The foregoing test has shown that the presence of protective layers on both sides of the breathable membrane is effective to prevent failure of the membrane. However, in the absence of a protective layer disposed between the membrane and a contiguous layer of relatively hard material, the test readily shows that the membrane will fail in normal use of the carpet, particularly in the situation wherein persons wearing shoes with pointed heels walk on the carpet.

With reference to present Fig. 2, it has been noted that the scrim 32, which is fabricated and applied to a surface of the membrane 34 in accordance with the teachings of Martz, U.S. Patent 5,656,167 (referenced on page 5 at line 10 of the present specification), is effective in protecting the membrane 34 from the primary backing 28, so that the carpet is able to retain the characteristic of being liquid impermeable during application of the foregoing impact testing. The Martz patent discloses a fabric comprising a breathable membrane which is resistive to transport of liquid water and is stabilized dimensionally against distension by forces which may be applied to the membrane, wherein the membrane includes a reinforcing drapable matrix of filaments (note claim 23 of Martz).

In the rejection of the claims, the examiner relies on Ellis to show basic components of the claimed subject matter of a secondary backing layer adhered to a primary backing layer,

and a breathable film (element 12) adhered to a side of the secondary backing opposite the primary backing (Point 2 of the Action). The examiner notes that the present claims are no longer anticipated by Ellis because the claims recite that the breathable membrane is located between the primary and the secondary backings, while Ellis teaches a locating of the breathable film (which the examiner equates to the claimed membrane) on the outer surface of the secondary backing.

The examiner then states (Point 4 of the Action) that one can readily modify the structure of Ellis in accordance with a teaching of Irwin, namely, that a thin film of liquid impervious thermoplastic material can be placed either to the rear of the primary backing or to the rear of the secondary backing (Abstract). Similar teaching is presented in Irwin in col. 2 at line 4-6, and in col. 4 at lines 42-48. It is noted that the Irwin does not teach that his film is breathable, but the examiner believes that, with respect to applying the art of Irwin against the present claims, it does not matter whether the liquid impervious film has or does not have the characteristic of being breathable. It is clear from the above-noted discussion of the impact testing that, in the case of breathable film, which by nature is generally thinner and more fragile than a film that is simply impervious to liquid water, the teaching of Irwin is misleading, and would direct one away from the practice of the present invention because the fragile breathable film might be destroyed by contact with relatively rough hard materials found in various layers of a carpet.

With respect to those claims that also recite a stabilizing layer, the examiner relies further on the teachings of Higgins who discloses a layer of fiberglass stabilizing material [section 0176]. This paragraph also teaches the alternative materials of glass scrim materials as well as woven or non-woven textile materials such as polyester or nylon. Higgins treats these differing forms of scrim as being equivalent for the purpose of constructing his layered cushioned composite textile product (Note title of invention and the beginning of the Abstract), and therefore contradicts a basic teaching of the present specification wherein the present inventor, Martz, references his previous U.S. patent 5,656,167 (as noted above) for a

construction of the appropriate form of scrim to be employed in the construction of the present invention as set forth in the present claims. While not mentioned by the examiner, Fig. 19B of Higgins shows a section of carpet having tufts of yarn, a layer of scrim beneath the tufting, and a layer of fiberglass which are secured to each other by layers of adhesive, and wherein there are further layers of rebound material and a felt at the bottom of the section of carpet.

It should be noted, however, that Higgins appears not to teach the use of a thin breathable film, and that all of the components of the Higgins textile product have considerable strength, as compared to the breathable film. Therefore, for the purpose of practicing the present invention, as set forth in the present claims, there is no indication in Higgins as to how to construct a suitable form of stabilizing layer that could be used in a carpet with a breathable film without destroying the breathable film. The need to avoid such destruction is evident from the above-noted impact testing of a carpet. It is believed that the teaching of Higgins would mislead a person constructing a carpet of a breathable film as to how a film should be stabilized and protected from other elements of the carpet.

Therefore, there would be no motivation to combine Higgins and Irwin with Ellis to support the rejection under 35 U.S.C. 103.

In view of the foregoing analysis, claim 1 is amended to distinguish over the teachings of the cited art. Material relating to the stabilizing layer is extracted from claim 2 and is inserted into claim 1. Furthermore, the stabilizing layer is said to be in contact with the breathable membrane for dimensional stability of the carpet. In view of the discussion of the aforementioned impact test, it is apparent that, in addition to the benefit of stabilization provided by the stabilizing layer, the stabilizing layer protects the breathable membrane from the blows of the hammer in the impact test, this indicating that the contacting of the stabilizing layer with the membrane would enable the carpet (and the membrane) to withstand the repetitive application of force from pointed heels of a shoe on the foot of a person walking on the carpet.

In view of the amendment of the claims, claim 8 is canceled because its subject matter appears now in claims 1 and 2. Claims originally dependent from claim 8 are made dependent from either claim 1 or claim 2.

It is emphasized that none of the cited art teaches the structure of claim 1 with the emplacement of a membrane, which is both breathable and impervious to liquid, between backing layers of a carpet, and wherein a stabilization layer is placed in contact with the membrane on a side of the membrane facing the tufting layer. As noted in the discussion of the aforementioned impact test, this configuration, which is shown in present Fig. 2, has been found to pass the impact test, while carpets formed without this configuration of the stabilizing layer fail the impact test with rupture of the membrane.

Accordingly, the foregoing art cannot be combined, as suggested by the examiner because their teachings would lead to a failure of the carpet. In view of the foregoing amendment and argument, it is urged that the foregoing rejections have been overcome so as to secure allowance of the rejected claims. New claim 24 is presented for further definition of the invention, recites features discussed in the foregoing argument, and is believed to be allowable in view of the foregoing argument.

The foregoing amendment is believed to meet all the points raised by the Examiner so as to place the claims in condition for allowance. If any of the matters raised in the Action or any further matters have not been adequately resolved by this amendment, a telephone interview between Applicant's representative and the Examiner is requested in order to resolve any such outstanding matters.

It is believed that all the claims are now in condition for allowance in that they patently distinguish over the art. Accordingly, a favorable response indicating such condition is earnestly solicited.



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Date: July 2, 2007

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "David M. Warren".

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